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Woodall

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(54) **NEURAL SENSORS**

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(57) **ABSTRACT**

A neural sensor is provided which receives raw input data defining a pattern, such as image or sound data, and generates a classification identifier for the pattern. The neural sensor has a pattern array former which organizes the raw input data into the proper array format. A first order processing section receives the pattern array and generates a first order feature vector illustrative of first order features of the input data. A second order processing section also receives the pattern array and generates at least one second order feature vector illustrative of gradients in the input data. A vector fusion section receives the feature vectors from the first and second order processing sections and generates a single fused feature vector which is provided to a pattern classifier network. The pattern classifier network, in turn, generates a pattern classification for the input data.

16 Claims, 6 Drawing Sheets